



**Portable digital
video/audio recorder**

STC-H383

AVIDIUS mobile

User Manual

Dear Customer!

Thank you for purchasing our product! We hope you will enjoy working with our portable digital video/audio recorder.

Please read this manual carefully before using the product. It will help you to learn all the diversity of video and audio recorder's possibilities.

Our Tech Support is always ready to assist you. In case of any questions, please don't hesitate to contact us:

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Please note that we are always ready to develop any customized solution for you. Any questions regarding our products and development costs should be addressed to our Sales department: info@speechpro.com.

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1 INTRODUCTION

Portable digital video and audio recorder **AVIDIUS mobile** (hereinafter – video/audio, recorder, device) is designed for synchronous high quality recording of audio and video information in heavy conditions using an external miniature video camera and internal or external microphones.

Recorded video and audio data is stored in a built-in flash memory card of the device.

Due to compact size and light weight the recorder can be used for covert or body-worn surveillance.

Video and audio recording may be started and stopped manually or automatically (using built-in timers and/or preset Voice Activation threshold).

The recorder has an integrated rechargeable battery which is also used for an external video camera power supply.

External video camera and microphones can be fastened firmly under severe operating conditions because of durable plugs and ports with a fixation possibility. Metal case protects the recorder from hits, which are unavoidable for such devices, and guards from electromagnetic emission effects (from such sources as computers, mobile phones etc.).

In the recorder, the most up-to-date video codec Analog Devices ADV212 JPEG2000 is used. High resolution (720x576) and frame-accurate compression allows fixing a variety of events, including those with a great quantity of moving objects. It's easy to extract any frame of a record for analysis and, for example, identification of a controlled object.

The recorder is delivered with **AV Manager** software for setting video and audio recording parameters, playback in different modes (rapid, slow and frame-by-frame), saving separate frames, and exporting to other video formats.

You can create three different user recording profiles by combining camera, video and audio recording settings. You can preset settings for various conditions using a PC.

2 DELIVERY SET

Portable digital video/audio recorder AVIDIUS mobile with an integrated battery	1
Video camera connection cable (length – 0.8m)	1
AV Manager software and recorder's driver on mini-CD	1
Mini-USB 2.0 5 pin cable (length – 0.4m)	1
Power supply adapter (110-240V/50-60Hz)	1
Line input audio cable (stereo), length – 0.3m	1
External microphone with a remote control unit (cable length – 0.8m)	1
Video camera QN-C619 (LCL-619) with a cable (length – 0.8m) ¹	1
Miniature headphones	1
User Manual	1
Package	1

Accessories

Power supply adapter (110-240V/50-60Hz)
Miniature headphones
Remote control unit
External microphone
External microphone with a remote control unit
External microphone on a stand
Video camera VZA-734 with a cable
Video camera VEA-634 with a cable
Video camera QN-C619 (LCL-619) with a cable
Video camera connection cable
Line input audio cable (stereo)
External microphone connection cable
Mini-USB 2.0 5 pin cable (length – 0.4m)
Shockproof case Peli-1200 micro

¹ Please see Appendix B for more information about the QN-C619 (LCL-619) video camera.

3 SPECIFICATIONS

Video signal parameters		
Video standard		PAL, NTSC
Picture resolution		720x576
Video compression algorithm		JPEG2000
Frame rate	PAL	1...25 fps
	NTSC	1...30 fps
Video bit rate		1...20 Mbit/sec
Audio signal parameters		
Analog signal compression		No compression μ-law (2-x compression)
Analog signal coding		PCM 16
Recording mode		mono, stereo
Sampling rate, kHz		8 or 16 kHz
Signal-to-noise ratio		72 dB min.
Total harmonic distortion		0.05% max.
Manual gain control range		-30...+30 dB
Automatic gain control depth		12 dB
Inputs		Microphone Line
Headphones: resistance		16 Ohm min.
General		
Built-in flash memory size		12 GB
Microsoft OS supported		Windows XP Windows Vista
PC connection interface		USB 2.0 Hi Speed
Operating temperature		-10...+60°C (+14...+140°F)
Dimensions		112 x 59 x 15.8 mm
Weight		180 g (with battery)
Case material		Metal

4 MAIN FEATURES

AVIDIUS mobile and co-delivered software provide:

- Video and audio recording from external camera and built-in or external microphones.
- Control of video camera pointing precision with built-in screen (real-time channel).
- Audio only recording.
- Audio recording with double compression or without compression.
- Audio recording with different sampling rates.
- Starting and stopping recording by means of the ON/OFF switch on the recorder's body or on a remote control unit.
- Timer recording.
- Starting the recording automatically when a sound level threshold is exceeded (Voice Activation).
- Effective automatic gain control of audio signal.
- Connecting the recorder to a PC with the USB-interface.
- Saving video and audio recordings to a PC's hard drive in a unique **.amr** format. Playing files with this extension is possible only with the help of the **AV Manager** software.
- Playing speed control.
- Loop playback mode.
- Recorded information protection from unauthorized operations.
- Access to the recorder's settings by means of a personal identification number (PIN code).
- Built-in battery charging from the adapter (110-240 V/ 50-60 Hz, connected to USB port of the recorder) or from the PC USB port.
- Built-in time and date.

5 RECORDED DATA PROTECTION

To protect recorded information from unauthorized use and disclosure, main recorder's functions (recorded data playback and deleting, recording parameters modification) can be realized only by means of **AV Manager** software.

If desired, the user can protect recorded information with a digital PIN code which is to be set and changed with the help of *AV Manager* software. PIN code protection is not a default setting. For more details see section 8.4.2.

AVIDIUS mobile provides recorded data authentication after copying them to a PC hard drive by means of a ***digital signature*** (see section 8.4.8).

6 GENERAL INFORMATION

6.1 Controls and jacks

The video/audio recorder's front, top and side views with indicated controls and jacks are shown in Figure 1. For explanation see Table 1.

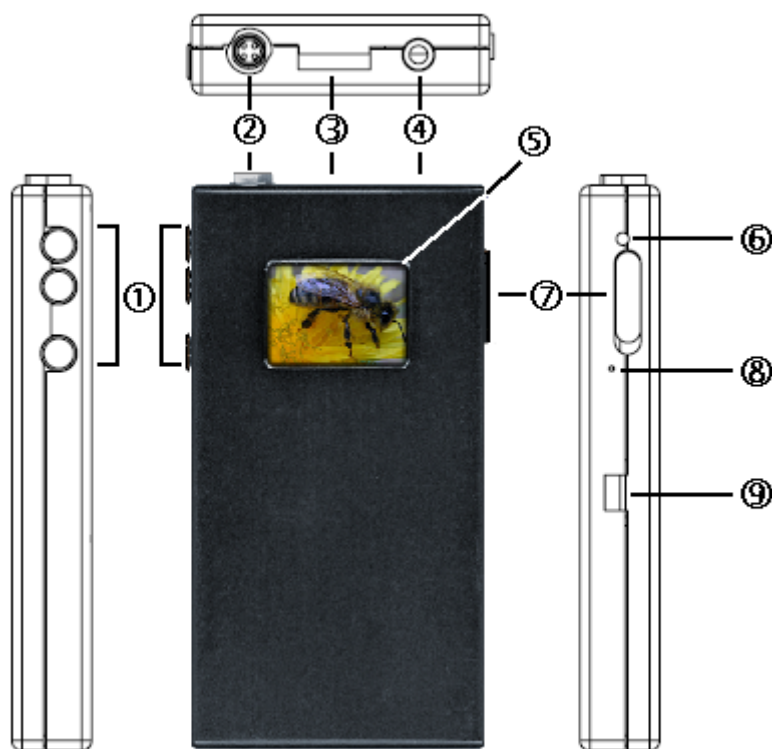


Figure 1 –Front, top and side views of the recorder

Table 1 – Video/audio recorder controls and jacks

No.	Marking	Description
1	▲ ▼ ▶	Control buttons
2		Video camera connection jack
3		Microphone, remote control unit and line input audio cable connection jack
4	🎧	Headphones connection jack (3,5 mm)
5		OLED-display

No.	Marking	Description
6		Internal microphone
7	I O	Recording ON/OFF switch
8		RESET button
9	USB	PC and external power supply connection jack

6.2 Display

The video/audio recorder has a color graphical OLED-display with 128x96 pixels resolution.

Three types of the display's main operating screens are shown in Figure 2. In the upper field of each operating screen the current date and time are located. The rest part of the screen contains 6 fields with information and control items (depending on the screen type).

The information and control items of each screen are listed and explained in Table 2.

To enable display (and the recorder), just press any of the recorder's control buttons or the recording ON/OFF switch. The backlight switches on and the **1st screen** (Figure 2a) appears on the display. The *1st screen* represents the recorder's status information and the current recording profile settings.

Using the ► control button, you can pass on to the **2nd screen** (Figure 2b) where the recording profiles menu is represented. The **3rd screen** (Figure 2c) is used for setting the current recording profile parameters.

















Figure 2 – The OLED-display. Screen types



Please see Table 2 and section 7 for more details about functions

of each screen graphical items.

Table 2 – Information and control items of the screens

Item	Description
1st screen – Status information and current settings (Figure 2a)	
	Recording is started (if recording is off, the field is empty)
	AVRecorder status: <ul style="list-style-type: none"> – Timer recording is enabled (🕒). – Battery indicator (🔋). – Free memory, % (68%).
	Video settings: <ul style="list-style-type: none"> – Video system (AUTO, NTSC, PAL). – Video bit rate, Mbit/sec. – Picture resolution (720x576). – Frame rate, fps.
	Audio settings: <ul style="list-style-type: none"> – Mono recording from an internal/external microphone (🎤) or through a line input (🔊). – Stereo recording from an internal and external microphones (🎤🎤), from internal/external microphone and through a line input (🎤🔊) or from 2 line inputs (🔊🔊). – Sampling rate, kHz (16/24). – Gain, dB (📶).
2nd screen – Recording profiles menu (Figure 2b)	
	Back to the <i>1st screen</i>
	Manual mode (changing the current profile settings quickly)
	Default profile (impossible to change)
	User profile I (created and changed with the <i>AV Manager</i> software)

Item	Description		
	User profile II (created and changed with the <i>AV Manager</i> software)		
	User profile III (created and changed with the <i>AV Manager</i> software)		
3rd screen – Current profile settings menu (Figure 2c)			
	Back to the <i>2nd screen</i>		
	Voice Activation mode	VA ON	Voice Activation (VA) is enabled/disabled (ON/OFF)
		Level 0	VA start/stop threshold
		Timer 0	Time period during which the recording still goes on after the input level fell below the VA threshold value
	Timer mode	Timer 1 ON	Timer number (1..5) and status (ON/OFF)
		Date 01 Jan 2000	Date of record session start (day, month, year)
		Time 00:00	Time of record session start (hh:mm)
		Duration 00:00	Record session duration (hh:mm)
		Priority ON	Priority of timer recording over operator’s commands (ON/OFF)
	Video recording parameters	System AUTO	Video system: AUTO NTSC (M, 443) PAL (BG, M, N)
		Bit rate	1..20 Mbit/sec
		Frame rate	1..25 fps for PAL 1..30 fps for NTSC
		Brightness	
		Contrast	
		Color	
		Camera VCC	Video camera supply (5, 6, 9 or 12 V)

Item	Description			
	Audio recording parameters	Source L	INT MIC	Left channel
		Source R	NONE	Right channel
		Channels	MONO	Record format: MONO / STEREO
		Sample rate	16 kHz	8 kHz or 16 kHz
		Gain	0	Gain level, dB
		Coding	PCM	Coding – PCM (uncompressed) uLaw-compression (μ-law)
		AGC	OFF	Automatic gain control (ON/OFF)
	Information (serial number, firmware version number)			

6.3 Connecting video camera

Connect a cable of a color or black-and-white video camera to the video camera jack of the recorder (see 2, Figure 1)

6.4 Connecting an external microphone and a remote control unit

An external microphone and a remote control unit (Figure 3) are connected to the recorder's jack 3 (see Figure 1) with a multiple-contact plug. External microphone combined with a remote control unit is also connected to the jack 3 by means of a common multiple-contact plug.



Figure 3 – External microphone and remote control unit

To realize recording from an external microphone set EXT MIC as an audio signal source of the left or the right channel using the recorder's manual mode settings (see Table 2) or the *AV Manager* software (see section 8).

6.5 Recording from an external audio source

To connect an external audio source (tape recorder, audio player etc.) to the recorder use line input audio cable (stereo). Audio cable (Figure 4) is connected to the recorder's jack 3 (see Figure 1) with a multiple-contact plug.



Figure 4 – Line input audio cable (stereo)

To realize recording from an external audio source set LINE L as an audio signal source of the left channel and LINE R as an audio signal source of the right channels using the recorder's manual mode settings (see Table 2) or the *AV Manager* software (see section 8).

6.6 Connecting headphones

Connect headphones to the jack 4 of the recorder (see Figure 1).

6.7 Connecting to a PC

Video/audio recorder is connected to a PC by means of the USB connection cable. Follow these steps to provide correct connection and operation:

- 1) Connect the USB cable (provided) to the USB port of the recorder.
- 2) Connect the USB cable to the USB port of your PC.
- 3) Run the AV Manager software.
- 4) Choose **Service ► Connect to device** menu command or press F5 button on a PC keyboard (see section 8.4).

- 5) Enter a PIN code, if it is set. When using the recorder for the first time, PIN code is not set.

Attention!

Before connecting the recorder to a PC make sure that PC case is effectively grounded. Connection to ground is strictly recommended if you intend to connect the recorder to a PC and an external power supply and/o an external signal source at the same time.

6.8 Power supply

Video/audio recorder is powered by an integrated Li-ion battery (1800 mAh).

The recorder's battery is charged from an external power source (power supply adapter 110-240V/50-60 Hz).

6.9 Flash memory

Video and audio data is recorded to and stored in a built-in non-volatile 12GB NAND flash memory.

Even if the recorder is not powered, all data is stored in its flash memory for up to 10 years.

All recordings can be erased from the recorder's memory either manually or by means of the *AV Manager* software (see 7.3).

7 BASIC OPERATION

7.1 Preparing AVIDIUS mobile for operation

Before using the recorder for the first time it's highly recommended to charge an integrated battery.

The recorder with a fully charged battery is ready to operate in active (manual) mode or with a PC (using the *AV Manager* software).

In active mode the recorder can only perform data recording and erasing.

Creating user profiles, setting a PIN code, playback recordings and other functions can be realized only by means of the *AV Manager* software. For that connect the recorder to a PC using a USB cable and install the driver and the *AV Manager* software from the installation CD. For more details please read the section 8.

7.1.1 Before recording

Before recording with the recorder do the following:

- 1) Connect the recorder to an external power supply source (if necessary).
- 2) Connect an external video camera to the recorder.
- 3) Connect an external microphone, a remote control unit or an external microphone with a remote control unit to the jack 3 of the recorder.
- 4) Connect an external audio signal source to the jack 3 of the recorder (if necessary).
- 5) Connect headphones to the jack 4 of the recorder (if necessary).
- 6) Switch the recorder on.
- 7) Set current date/time and recording parameters considering the recording conditions.
- 8) Point connected video camera at the aim using the *real-time channel* mode (see section 7.1.4)

7.1.2 Switching on the recorder

To switch the recorder on press any control button or recording ON/OFF switch.

The *1st screen* with recording parameters values will appear on its display (see Figure 2a, Table 2) after the recorder is switched on.

When used for the first time, the recorder starts operating with the following default (manufacturer's) settings.

Video settings:

- Video standard: PAL.
- Bit rate: 20 Mbit/sec.
- Picture resolution: 720x576.
- Frame rate: 25 fps.

Audio settings:

- Audio recording mode: MONO.
- Sampling rate: 16 kHz.
- Compression: NONE.
- Input gain level: +30 dB.
- Automatic gain control (AGC): OFF.
- Left channel audio signal source: internal microphone (INT).

General settings:

- Timer recording: OFF.
- Voice Activated (VA) recording: OFF.
- PIN and date/time are not set.

7.1.3 Setting recorder's parameters

Functions of the display's graphical items are listed in the Table 2.

Setting recording parameters

The *1st screen* of the **AVIDIUS mobile** display shows status information and current recording profile parameters (see Figure 2a, Table 2). When switching on the recorder for the first time, the *1st screen* shows default settings.

After pressing the ► button twice, the display will show the *2nd screen* (if the recorder is connected to a PC, press the ► button once).

The *2nd screen* displays a **Recording profiles menu** (Figure 2b):

- Manual mode (changing and saving current profile settings).
- Default mode.
- User profiles (created in the *AV Manager* software).

To navigate in a profiles menu, use the ▲ and ▼ buttons, to activate a required mode use the ► button. To go to the previous screen select ↶ and press ►.

If one of the user profiles or default mode is activated, the momentary message "Loading..." will appear on the display. After that the *1st screen* with the selected mode information will be represented on the display.

When choosing the manual mode, the *3rd screen* appears. It displays a **Current profile settings menu** (Figure 3c):

- Video recording parameters.
- Audio recording parameters.
- Voice Activation parameters.
- Timer recording parameters.

To navigate in a current profile settings menu and to choose any item use control buttons (▲, ▼ and ►). When choosing the ⚙️ item, an informational screen containing the recorder's serial number and firmware version number appear.

To enter any group of parameters, press ►. The selected parameters group setting screen will appear. Use ▲ and ▼ buttons to choose a parameter in the list and the ► button to activate or deactivate a corresponding field. To save changes and exit the setting screen, choose **Apply** and press ►. To quit the setting screen without saving, choose **Exit** and press ►.

Select ↶ and press ► to exit a current profile setting menu.

Setting date/time

Current date and time are located in the upper part of each screen. To set date/time, enter the *3rd screen*.

Shift a cursor to the upper field of the third screen using ▲ or ▼ control button and press ►. The date/time setting screen will appear.

Select date in the **Date** field and time in the **Time** field. To save settings, choose **Apply**. To cancel changes, choose **Exit**.

The date and time can be also adjusted by means of the *AV Manager* software (see section 8.4.3).

Note

All set parameters (except current date and time) are stored in the recorder's flash memory regardless of the battery power status.

If the battery has fully run down, date and time are to be set anew.

7.1.4 Real-time channel viewing

The **real-time channel** viewing allows user to control a video camera pointing precision. This option can be used both before starting the recording and during the recording process.

To view the real-time channel on the display, press the ► control button.


If the recorder is connected to a PC, the real-time channel may be represented in the preview or player windows of the *AV Manager* software (see section 8).

7.2 Recording

7.2.1 Manual recording start/stop

The video and audio recording process can be started/stopped both manually and automatically.

To start recording manually, set the switch on the recorder's body (7, Figure 1) to the **I (REC)** position or on a remote control unit to the **ON** position. At that the recorder may be switched either on or off.

After the recording is started, the *1st screen* will appear on the display. During the whole recording process an animated item  is being displayed in the upper field of the screen. With the recording process completed, this field becomes empty.


The recorder's control buttons are blocked when the recording is on. For the purpose of the recording protection from possible detection the display's backlight automatically switches off in a short period of time after the process starting.

To stop the recording, set the switch on the recorder's body to the O (**STOP**) position or on a remote control unit to the **OFF** position.

7.2.2 Voice Activation recording mode

To perform voice activated recording, first enable the **Voice Activation (VA)** mode and specify the required VA start/stop threshold and other VA settings when adjusting manual mode parameters (if this mode is supposed to be used) on the recorder or creating a user profile by means of the *AV Manager* software.

To start recording in the VA mode, set the switch on the recorder's body (7, Figure 1) to the I (**REC**) position or on a remote control unit to the **ON** position. At that the recorder may be switched either on or off.

As soon as the input level exceeds the specified threshold value, the recording will be started and an animated item  will appear on the display. The recording will be stopped in a defined period of time after the input level falls below the specified threshold. This period is to be determined when enabling the VA mode.

To stop the voice activated recording manually, set the switch on the recorder's body to the O (**STOP**) position or on a remote control unit to the **OFF** position.

VA mode can be used in combination with the timer recording.

7.2.3 Timer recording

Timer recording is used if for some reason the recording cannot be started manually or by voice activation. This mode permits automatic recording at any desired time by using built-in timers. The timers allow you to schedule up to 5 recording sessions.

Timer recording will be started and stopped automatically regardless of whether the recorder is switched on or off.

To enable the timer recording mode, turn one or several timers on and set the desired start date/time and duration for each recording session when adjusting manual mode parameters on the recorder or creating a user profile by means of the *AV Manager* software.

The operator's commands usually have higher priority than the timer settings, i.e. the user can always stop manually the recording process started by a timer. To do it, just set the switch on the

recorder's body (7, Figure 1) or on a remote control unit first to **REC** and then to **STOP**.

But, if necessary, you can activate the **Priority** option in the timer parameters menu when adjusting manual mode parameters on the recorder or creating a user profile by means of the *AV Manager* software. This option enables timer to ignore the operator's commands, i.e. the timer recording session cannot be stopped manually. The session will stop only after its scheduled end, or when the memory gets full, or as a result of the battery discharge. The **Priority** option is to be set separately for each timer.

The timer recording can be used along with the VA mode.

Note

If the VA and the timer recording modes are enabled simultaneously, the recording will be started at the preset time and stopped in a defined time period after the input level falls below the specified VA threshold.

7.3 Erasing recorded information

Recorded information can be erased from the flash memory using either the recorder's control buttons or the *AV Manager* software.

To delete recordings quickly with the help of the control buttons, do the following:

- 1) Activate deletion option ticking **Enable erase button** in the device settings window of the *AV Manager* software (for details refer to the section 8.4.4)
- 2) Set either the *1st screen* or the *2nd screen* on the recorder's display.
- 3) Press ▲ and ► buttons at one moment.
- 4) The question "Erase memory?" will appear on the display. To confirm erasing, choose **YES**. To cancel erasing, choose **NO**.

Please note that ALL recordings will be removed from the recorder's flash memory.

Attention!

Information deleted from the recorder's flash memory can not be recovered.

7.4 RESET button

The RESET button (8, Figure 1) is to be used to reset the recorder if it hung up. The button can be pressed by means some very thin object only (e.g. a clip). At that all the recorder's settings will be kept.

8 AVIDIUS MOBILE SOFTWARE

8.1 AVIDIUS mobile software kit and its functions

The software kit delivered with the recorder includes **AVIDIUS mobile** device drivers and the **AV Manager** program.

The **AV Manager** software allows:

- Viewing video recorder information (serial number, available memory size, battery level etc.).
- Setting recording parameters.
- Playing recording in various modes (original, rapid, slow, frame-by-frame).
- Loop playback of any selected recording's fragment.
- Saving separate frames.
- Exporting to other video formats (.avi format).
- Setting and changing access code (PIN code) to the recorder's parameters.

8.2 System requirements

- CPU Intel Core 2 Duo 6300 1.86 GHz.
- RAM 1 GB or more.
- OS: MS Windows XP SP2 or Microsoft Windows Vista.
- At least 40 GB hard disk free space.
- One free USB port.
- Video card compatible with *Direct3D 9* (with *Pixel Shader 2* support to control brightness, contrast and color)

8.3 Software installation

Connect video recorder to a PC. The operating system detects a new device and suggests installing an appropriate driver for it.

Insert your installation CD into your CD ROM drive and follow the installation wizard instructions. Specify the folder containing **AVIDIUS mobile** drivers. The system will copy necessary files and let you know when the installation is done.

After the driver has been installed you can install the *AV Manager* software. Just run the **setup.exe** file and follow the instructions on

the screen. Specify the target folder to copy the program files (by default it is **C:\Program Files\Speech Technology Center\Avidius mobile** for MS Windows XP or **C:\Users\ <User_Name>\AppData\Roaming\Speech Technology Center\Avidius Mobile** for MS Windows Vista).

Attention!

It is highly recommended to exit the AV Manager before starting record (Voice Activated, by timer or using ON switch).

8.4 Using AV Manager software

8.4.1 Running the program. AV Manager main window

To run *AV Manager* software, select its entry in the **Start** menu (by default it is installed in the group **All Programs ► Speech Technology Center ► AVIDIUS mobile**).

Note

If a PC with the installed AV Manager software is connected to local net or Internet, then program loading takes up to 2.5 minutes. Please follow these recommendations to resolve the problem:

1) Select **Start ► Control Panel ► Internet Options**. In the **Connections** tab of the **Internet Properties** window click the **LAN Settings...** button and tick **Automatically detect settings** or **Use automatic configuration script**.

*If OS MS Windows Vista is used, enabling the **Automatically detect setting** does not give a result sometimes.*

*In view of **Firefox** Web browser becomes very popular, the parameters mentioned above are most likely not to be set.*

2) You may use more radical method, but it is not quite safety.

*In the **Internet Properties** window go to the **Advanced** tab and disable **Check for publisher's certificate revocation** parameter.*


After starting you will see the main window of the AV Manager (Figure 5).








Figure 5 – The main window of the AV Manager

This window contains the main menu, toolbox, workspace, preview window, informational panel and status line.

Table 3 – Menu and toolbox commands of the *AV Manager*

Menu	Command	Button	Description
File	Play from disk		Play recording from the hard disk
	Recent files		Drop-down list with the last 5 played files
	Exit		Exit from the program
View	Player window		Open the player window
	Customize...		Open the window of GUI settings

Menu	Command	Button	Description
List	Load and play		Load and play selected item
	Export to disk		Export selected recordings to the hard disk
	Delete all		Erase all recordings from the device memory
	Select all		Select all recordings in the list
	Deselect		Remove selection
Service	Device settings		Call the recording parameters setting window
	Set current time		Call the current date and time setting window
	Set device profile		Load current profile to the recorder
	Play video signal		Preview the video camera real-time channel
	Diagnostics		Identify recording errors
	Connect to device		Connect the recorder and a PC
	Enter PIN code		Call the window to enter an access PIN code to the recorder settings
	Change PIN code		Call the PIN code setting and changing window
	Authenticate		Call the digital signature authentication window
	Export public key		Call the public key format selection window
Help	About AV Manager...		View short program info

The main window **workspace** consists of two tabs: **AVIDIUS** and **PC**.

The **AVIDIUS** tab contains a list of recordings stored in the recorder's memory and their attributes:



- **Nº** – recording number
- **Started** – date and time of a record start
- **Duration**
- **Video system**
- **Frame rate**
- **Stream** –video bit rate
- **Sound** – sampling rate, mono/stereo, compression

The **PC** tab represents a list of recorded files in **.amr** and **.avi** formats saved on a hard disk and their attributes:

- **Name** – file name
- **Size (KB)** – file size in KB
- **Modified** – date and time of the last change

Playing of the **.amr** files is possible only in the *AV Manager* program. The **.avi** files can be played in the **Windows Media Player** in the presence of a special codec (it is installed during *AV Manager* software installation).

A **status line** of the main window shows the following information:

- **Total/Selected** – number of all records in the list (or number of files in the selected folder) / number of selected records (files)
-  **Connected** ( **No connection**) – the recorder is (is not) connected to a PC
- **Loaded** – number of records loaded from the recorder's memory
- **Player** – recording's number (file name) loaded for playing

The **PREVIEW** window is destined for playing records and viewing a real-time channel of the connected video camera.

Under the preview window, there are a playback slider and control buttons:

- ▶ (||) Play/Pause (button of double action)
- Stop Playing
- ▶▶ Play next item
- ◀◀ Play previous item

In the **DEVICE INFO** panel you can see following information about the recorder:

- **Serial number**
- **Total memory** (MB)
- **Free memory** (MB)
- **Battery** – battery indicator
- **Charging** – battery charge is on (●) / off (●)
- **Time** – current time and date of the device

With the help of menu command **View ▶ Customize...** the GUI settings window opens (Figure 6).



Figure 6 – The GUI settings window

Here you can choose a position of the **DEVICE INFO** panel (to the left or the right of a workspace) and change **language** (English or Russian). After changing language, it is necessary to restart the program.

8.4.2 Setting and changing a PIN code

If desired, the user can set a PIN code protection for the recorder settings. To set a PIN code, select **Service ▶ Change PIN code....** The following window will be displayed (Figure 7).

Just enter the desired PIN code (succession of 1-8 digits) in the **New PIN code** field, confirm the PIN code in the **Confirmation** field and click the **OK** button.

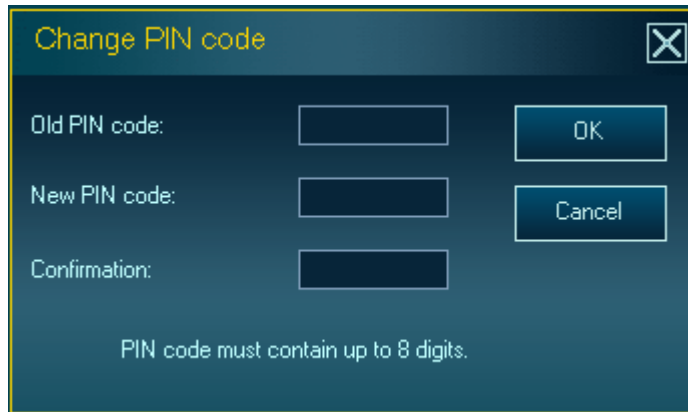


Figure 7 – The PIN code setting window

The PIN code can be subsequently changed or removed at any time using the **Service ► Change PIN cod...** command. In this case you will have to enter a currently used PIN code in the **Old PIN code** field and a new one in the **New PIN code** field. Confirm the new PIN code by entering it again in the **Confirmation** field and press the **OK** button.

To remove PIN code protection, leave the last two fields empty (Figure 7).

After a PIN code has been set, all subsequent launches of the software will start with a PIN code query (Figure 8).

If a PIN code has not been entered or has been entered incorrectly, the access to the settings and recordings is impossible.

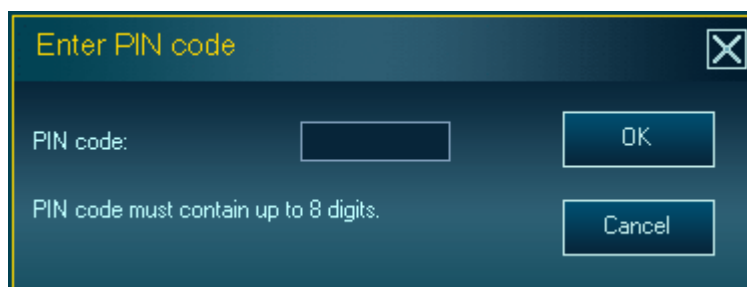


Figure 8 – The PIN code query window

If you failed to enter a correct PIN code, the program will give you a notification. To enter a PIN code once more, choose **Service ► Enter PIN code...** command. The query window (Figure 8) will appear again.

8.4.3 Setting current date and time

To set or change date and time use **Service ► Set time...** command. The **Set device date-time** window will appear (Figure 9).



Figure 9 – The Set device date-time window


The device and the PC current date and time are shown in the **Device date-time field** and the **Computer date-time** fields accordingly.

To set time manually, enter current date and time to the **Set date-time** field.

To set the PC current date/time onto the recorder, tick **Synchronize computer and device time** flag.

After settings are done, press the **OK** button.

8.4.4 Setting recording parameters

To set recording parameters (profiles), choose **Service ► Device settings...** or press the  button. The **Device settings** window appears (Figure 10) with the current parameters of the connected recorder.

If one of three user's profiles (1, 2, 3) is set on the recorder, the corresponding number is shown in the **Profile** field; otherwise, this field is empty (in case of default or another current settings).



Figure 10 – The Device settings window

In the **VIDEO SETTINGS** group-box you can choose:

- **Video system** (AUTO, PAL, NTSC)
- **Frame rate** (frame per second)
- **Bit rate** (Mbit per second)
- (brightness)
- (contrast)
- (color)

Frame rate is regulated in range from 1 to 25 fps (for PAL) or from 1 to 30 fps (for NTSC). Bit rate is regulated from 1 to 20 Mbit/sec.

According to the bit rate value, three video recording quality variants are possible:

- **High quality** – best quality, minimum duration;
- **Long duration** – maximum duration, poor quality;
- **Normal** – satisfactory quality, long-term recording.

In order to set video parameters, you have to activate the **Enabled** flag. If the flag is not set video parameters are disabled (audio recording only).

In the **AUDIO SETTINGS** group-box you can choose:

- **Mono / Stereo / Mute**
- **Sampling rate** (8 or 16 kHz)
- **Compression** (on/off)

Audio information can be recorded in mono or stereo format, without compression or with 2x-compression by μ -law, with sampling rate 8 or 16 kHz. If you choose **Mute** (video recording only), audio recording is disabled and audio settings are not available.

In the **LEFT CHANNEL** and **RIGHT CHANNEL** group-boxes you can choose audio signal source types for the right and the left channels. Stereo signal is recorded from both channels, while for mono recording only the left channel is used.

The following signal source types can be selected for the left channel:

- External Mic (in mono mode only)
- Internal Mic
- Left linear input

For the right channel, a signal source is set automatically depending on the left channel source:

- External Mic (Internal Mic as the left channel);
- Right linear input (Left line input as the left channel)

In the **LEFT CHANNEL** and **RIGHT CHANNEL** group-boxes you can also choose the way to control an audio signal gain level: with automatically (AGC) or manually. In the manual mode drag the slider to set the desired gain level. You can disable gain control by dragging the slider to the leftmost position.

The **VOICE ACTIVATION** group-box allows you to enable automatic recording start at a preset sound level (VA threshold). For that it is necessary to activate the **On** flag.

The VA threshold can be set within the 0..63 dB range. Current operation threshold is shown below. Current input level indicator displayed below can be used for reference. In the **Time** field you have to assign time period during which the recording still goes on after the signal level fell below the VA threshold value.

In the **TIMERS** group-box you can enable recording with the help of timers (from 1 to 5). Tick the desired timer(s) and specify recording start time/date (dd:mm:yy, hh:mm:ss) and duration time (hh:mm:ss). The minimum interval between successive recording sessions should be 1 minute.

In order to prevent an accidental manual interruption of the scheduled recording, activate the **Priority** flag for each enabled timer. In this case, the recording cannot be stopped manually with the help of switch 7 on the recorder's body (see Figure 1) or using a remote control unit.

Setting the **Enable erase button** flag in the right part of the window allows enabling option to delete all recordings from the recorder's memory with the help of the control buttons on its body (see section 7.3).

In the **Camera supply** field you have to choose power supply of the video camera (5 V, 6 V, 9 V или 12 V) which is supposed to be used for the recording with adjusted parameters.

After pressing the **OK** button, all set parameters will be loaded to the recorder as a current profile. The **Cancel** button cancels settings.

With the help of the **Default** button you can return parameters of the default recording profile (manufacturer's settings).

In the bottom of the window you can see **Max. record time available with current settings** (hh:mm:ss):

- **total memory** – time of recording to the whole memory (12 GB)
- **free memory** – time of recording to the unused memory

Saving, loading and deleting parameters

You can save your recording settings to a file of an internal data base on the PC's hard disk. These settings can be loaded later.

In order to save settings, press the **Save...** button. The **Save device settings** window will appear (Figure 11).

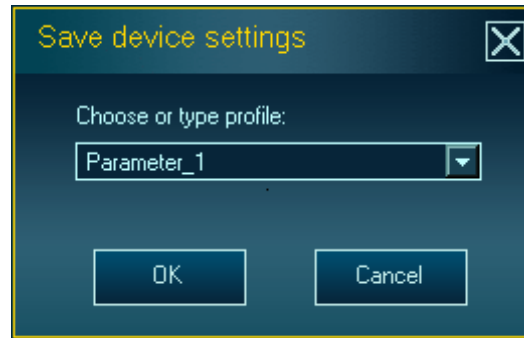


Figure 11 – The Save device settings window

Enter a new file name or choose the old one from a drop-down list where the settings are to be saved to and press the **OK** button.

In order to load saved settings, press the **Load...** button. In the **Load device settings** window (Figure 12) choose necessary file and press the **OK** button.

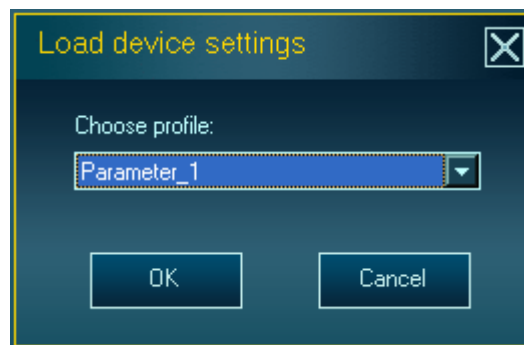


Figure 12 – The Load device settings window

Loaded parameters will be shown in the **Device settings** window.

To delete a file with the parameters press **Delete...** button. In the **Delete device settings** window (Figure 13) choose necessary file and press the **OK** button.

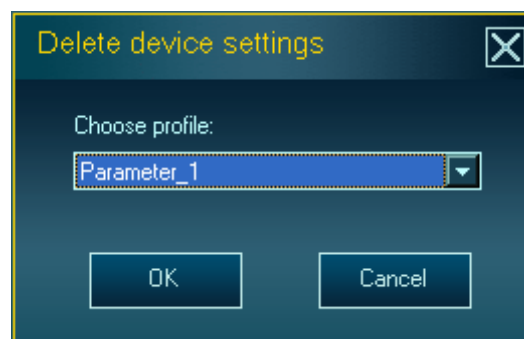


Figure 13 – The Delete device settings window

8.4.5 Loading a current profile to the recorder's memory

To load a recording profile to the memory of the recorder connected to a PC by means of the *AV Manager* software, you can use 2 ways:

- Select the **Service ► Set device profile...** menu command (see Table 3).
- Press the **Profile...** button in the **Device settings** window (Figure 10).

Whatever you choose, the **Set current device profile** window will appear (Figure 14).

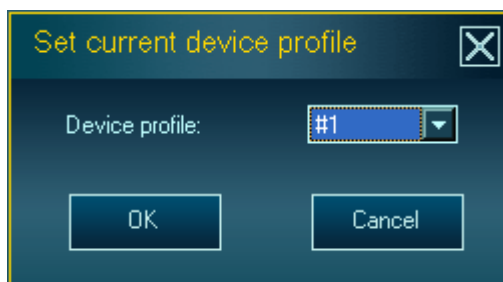


Figure 14 – The Set current device profile window


Here, you have to choose from a drop-down list one of the three user profiles (**#1**, **#2**, **#3**) or a default profile (**Default**).

After pressing the **OK** button, chosen recording profile will be loaded to the recorder's memory as a current profile.

8.4.6 Creating and changing user profiles

You can use three user profiles with the different parameters to for video and audio recording. Profiles are to be created with the help of the *AV Manager* program and loaded to the recorder's memory.

To create or change any of three profiles, you have to connect the device to your PC, run the *AV Manager* program and carry out following actions:

- 1) Load to the device one of three user profiles as a current profile (see section 8.4.5). At the first use of the recorder all three profiles and default presets are equal.
- 2) With the **Service ► Device settings...** menu command or the  button open the **Device settings** window (if it was not opened before). In the window (Figure 10) you will see the current profile's settings (chosen user profile) of the connected device. In the **Profile** field you will see a number of the profile (1, 2 or 3).

- 3) Change the required parameters and press the **OK** button. The settings will be saved in the recorder's memory with the given number and loaded to the device as a current profile. If you want to decline changes, press the **Cancel** button.
- 4) Repeat these actions in order to create or change other user profiles.

8.4.7 Working with records (playing, exporting to HDD and deleting)


With the help of the *AV Manager* software you can work with recordings stored in the device memory and with files (.amr and .avi formats) exported from the recorder to a PC.

All recordings stored in the device memory with their attributes are shown in the *AVIDIUS* tab of the main window (Figure 5). Files exported from the device memory are shown in the *PC* tab of the main window (Figure 5).

Playing records

The program allows you to play records of the device memory without copying them to HDD. It is also possible to play files of .amr and .avi formats exported from the device memory to HDD.


To start playing you have to select a record in the *AVIDIUS* tab or a file in the *PC* tab. Then make one of the following actions:

- Choose the **Play** command in the main or contextual menu.
- Click twice with the left mouse button at the recording's name.
- Press the **Enter** key.
- Press the  button in the toolbox.

The recording will be played in the **PREVIEW** window (Figure 5). The slider shows a current recording playback position.

To start playing files exported from the device memory to HDD, use **File ► Play from disk** menu command.

Playing records in the player window

The program lets you play records in a special **Player window** with larger resolution and additional functions (Figure 15). To open it window, choose **View ► Player window** menu item or press the  button in the top of the main window.

The **Player window** functions allow:

- Playing records in various modes (original, rapid, slow, frame-by-frame).
- Loop playback of any recording's fragment.
- Saving separate frames to your PC's HDD.

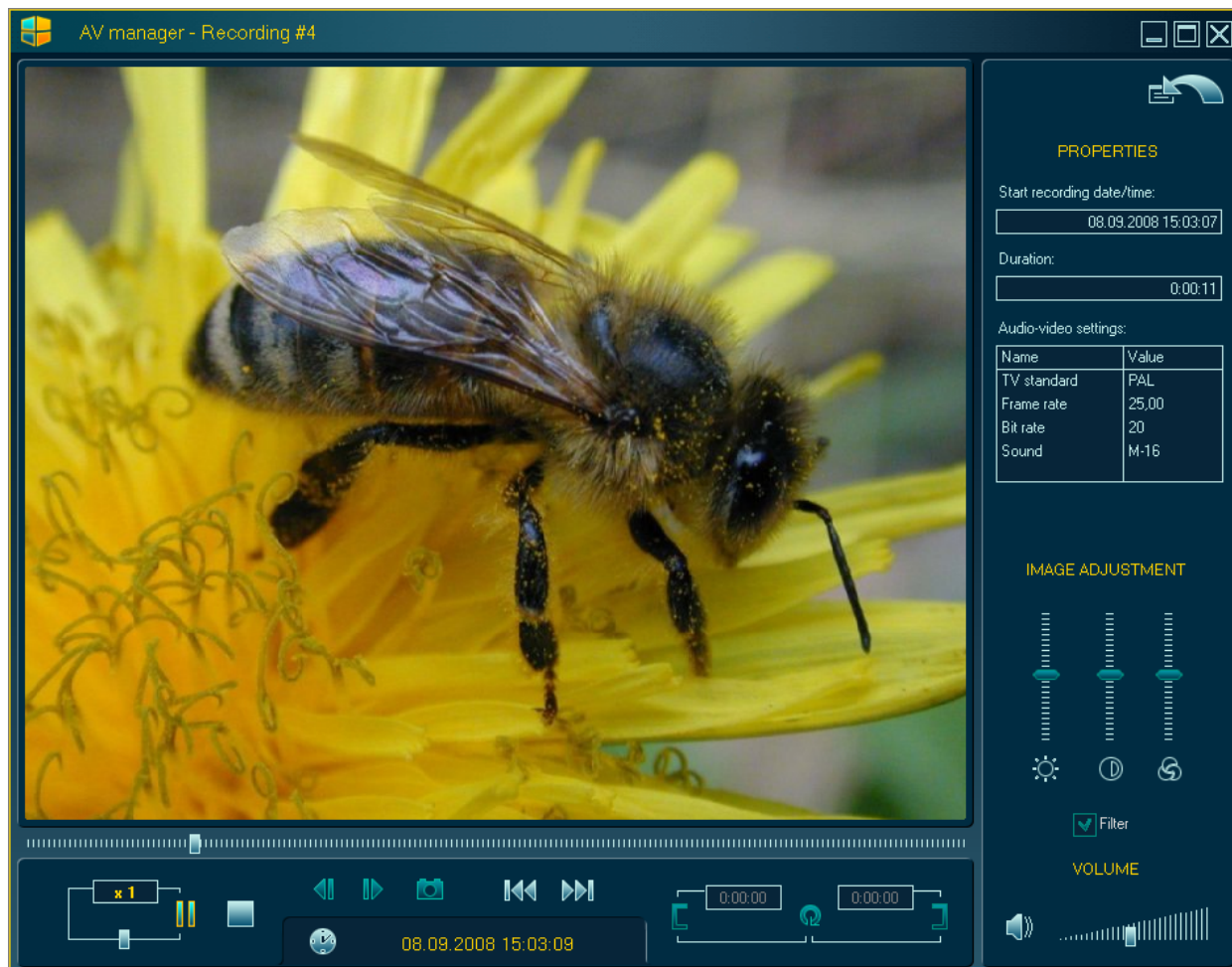









Figure 15 – The Player window

You can control playback with the help of the slider and buttons:

-  (||) Play/Pause
-  Stop
-  Play next item
-  Play previous item
-  Show next frame
-  Show previous frame


In the **PROPERTIES** group-box of the **Player window** start recording date/time, duration of the recording and its audio-video settings are shown.

To adjust image settings and volume, use the controls in the right bottom part of the window. You can switch the sound on/off by pressing the  button.

If there are quick-changing images in the played recording, set the **Filter** flag in order to avoid a “needle” effect. In this case, only even-numbered lines of each frame will be shown.

Note

*If you are going to play recordings produced with technical errors, (unstable camera signal, floating contact in the video camera jack, operator's fault etc.), it is highly recommended to enable the **Filter**. Otherwise, such recordings are impossible to be played.*

By pressing the  button in bottom part of the window, one of two parameters can be displayed:

- **Relative time** – recording duration from the start to the current position (Figure 16)
- **Absolute time** – time in the current position






Figure 16 – Relative/absolute time


You can speed up or slow down playback with the help of a special slider (Figure 17).




Figure 17 – The playback speed slider

Moving the slider to the left or to the right, allows increasing or decreasing record playback speed in 2, 4, 8 times. The current playback speed is represented in a **xN** format (N=1, 2, 4, 8). The **x1** value conforms to the original speed.

To view the recording in the **Frame-by-frame mode**, you have first to pause playing (press the  button). You can pass to the previous or next frame with the help of the  and  buttons.

In the frame-by-frame mode, you can save a current frame to a hard disk of your PC as a **.bmp** file. Press the  button at necessary

moment and define path and name of your file in the standard **Save** window.

In order to set parameters of the **Loop playback** of a fragment, you have first to pause playing (press the  button). Then mark out the beginning and the end of a fragment on the playback scale and enable the **Loop playback mode**:






- Move the slider of the playback scale to the left border position of the fragment and press the  button (Figure 18).
- Move the slider of the playback scale to the right border of the fragment and press the  button (Figure 18).
- Press the  button (the symbols of the fragment's borders on the scale will become red-colored).





Figure 18 – The borders of a fragment

To control playback in the **Loop mode**, use the ,  and  buttons. To stop the **Loop mode**, press the  button again.

To pass to the main window of the *AV Manager* program (without closing the **Player window**), press the  button. To return to the **Player window**, press the  button in the main window.


Viewing real-time channel

The *AV Manager* software allows viewing **real-time channel** of the video camera attached to the recorder (if the recorder is connected to a PC). Choose the **Service ► Play video signal** command or press the  button of the toolbox.

Video signal will be played in the **PREVIEW** window or the **Player window**. To stop viewing the real-time channel, press the  button again.

Exporting records to HDD

The export function lets you save all or selected recordings from the device memory to the PC's HDD (hard disk).

Select desired recordings and choose the **List ► Export to disk** command or press the  button of the toolbox. The **Export options** window will appear (Figure 19).

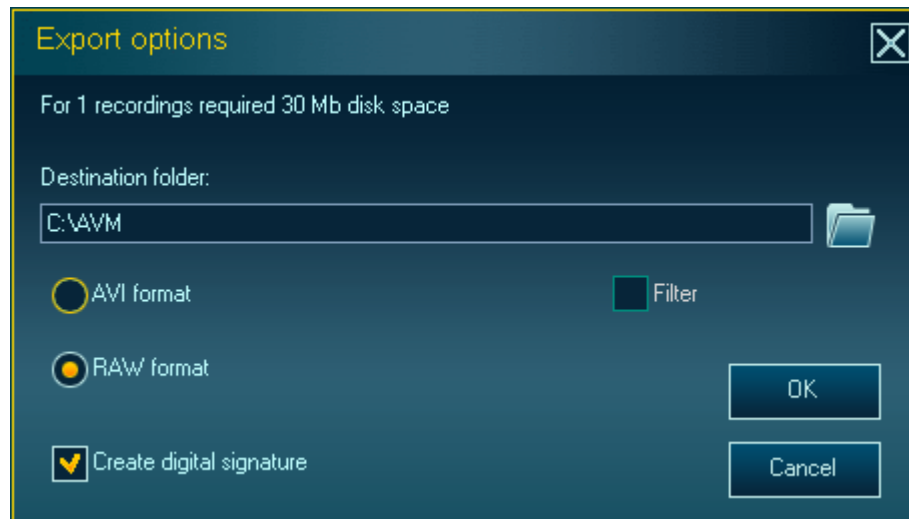


Figure19 – The Export options window

Here, select a folder to save the recordings to and choose format of the file (**AVI** or **RAW**). A RAW file will get the unique **.amr** extension.

When exporting to HDD files in the AVI format, you can use filter. If there are quick-changing images in the played recording, set the **Filter** flag in order to avoid a “needle” effect. In this case, only even-numbered lines of each frame will be saved to AVI file and the image will be more natural while further playing.

Each recording will be saved as a separate file a selected format. File creation date will correspond to date of copying a recording to the hard disk.

For the subsequent authentication of the recording exported to HDD, you may create a **digital signature** during copying (section 8.4.8). To create a digital signature, tick **Create digital signature** in the **Export options** window. The file of a digital signature will be saved with the **.dsg** extension at the same folder as the corresponding exported file.

Press the **OK** button to start the process of the recordings export.

Deleting records

In order to delete all recordings from the device memory, choose the **List ► Delete all** command or press the **X** button on the toolbox of the main window. Confirm or cancel erasing in the opened window (Figure 20).

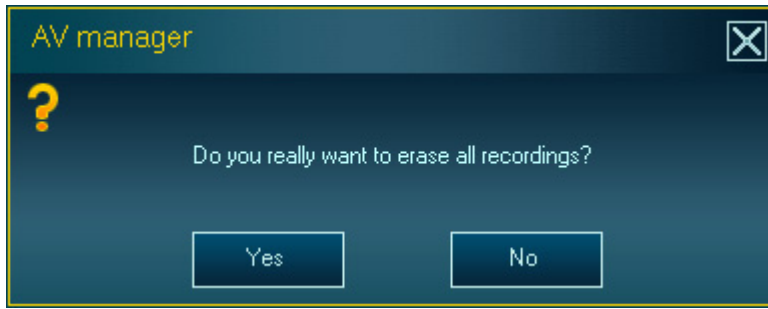


Figure 20 – The confirmation of erasing

Keep in mind that deleting a lot of recorded data can take several minutes.

8.4.8 Verifying digital signature

A digital signature lets you certain of the recording authenticity after exporting it to HDD. Any digital signature software can be used for verifying a digital signature.

To authenticate the recording with the help of the *AV Manager* software, choose the **Service ► Authenticate** command in the main window.

In the opened window (Figure 21), choose the file names of the recording and corresponding digital signature and press the **OK** button.

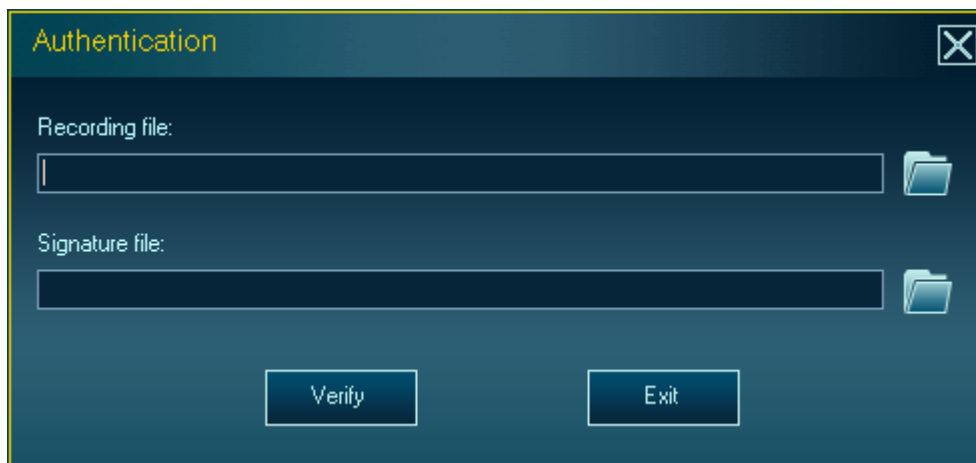


Figure 21 – The Authentication window

To verify a signature by other software means, you should get a **public key**. A public key is saved to the file on a PC's HDD. In this case, authentication is produced with the help of the *SHA1* hashing algorithm and the *RSA* unsymmetrical enciphering algorithm.

To generate a public key, use the **Service ► Export public key** command. Choose the public key format (**binary** or **XML**) in the displayed window (Figure 22).



Figure 22 – The Public key format window

Press the **OK** button and select a folder for a public key file location. The file will have *.bin* or *.xml* extension).

8.4.9 Recording diagnostics

The diagnostics function of the *AV Manager* allows identifying errors of reading data from the recorder or failure of data logical structure. As usual, it is impossible to play the recording with such errors (partially sometimes).

In order to realize diagnostics, select the recording in the list and choose the **Service ► Diagnostics** menu command. It will start the process of diagnostics (Figure 23).

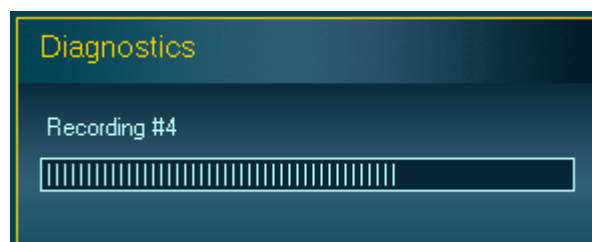


Figure 23 – Process of recording diagnostics

The process can take a long period of time. For instance, the time of diagnostics for the recording with 20 Mbit/sec bit rate is about one third of its duration.

When the diagnostics process is finished, the message with the result will appear (Figure 24). In case of finding an error, the message contains error code. The error code is a combination of flags (see Table 4).

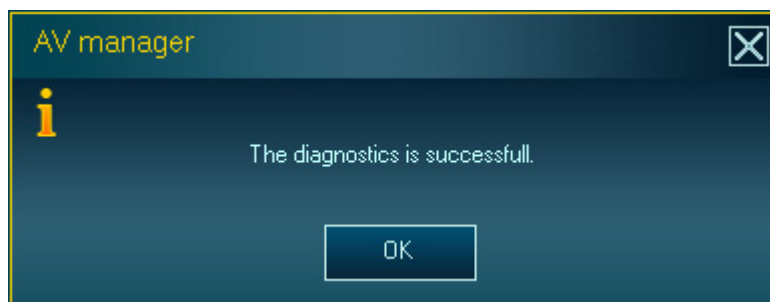


Figure 24 – The result of diagnostics

Table 4 – The flags of the error code

Flag	Description
0x01	Error of data reading from the device
0x02	Error of video pages indexes
0x04	Error of audio pages indexes
0x08	Error of frame rate
0x10	Error of next frame search
0x20	Error of frame index
0x40	Error of even/odd frames
0xff	Unknown error

More detailed information about detected errors contains in the **GvDevice.log** file (the **_LOGS** folder). By default the **_Logs** folder is located in **C:\Program Files\Speech Technology Center\Avidius Mobile**.

Note

If the **AV Manager** program is run on MS Windows Vista, the **_LOGS** folder is by default in **C:\Users\<User_Name>\AppData\Roaming\Speech Technology Center\Avidius Mobile**, where **<User_Name>** is a folder with the name of a current Windows user.

9 OPERATING CONDITIONS

The video/audio recorder should be used in the following conditions:

- Temperature: -10...+60°C (+14...+140°F);
- Relative humidity (non-condensing): less than 95% at +30°C (+86°F).

10 TRANSPORTATION AND STORAGE

Transportation is carried out by all transport vehicles at the temperature from range -50...+60°C (-58...+140°F) with protection from direct sunlight, atmospheric precipitation and excessive mechanical vibration.

Shelf life in warm conditions at the temperature from range +5...+40°C (+41...+104°F) and humidity below 80% is 5 years.

11 WARRANTY

The manufacturer guarantees that the issued devices conform to the technical requirements, whereby the user observes the conditions and regulations of operation, storage and transport, for a period of **24 months** from the date of sale.

During the warranty period the manufacturer is obliged to repair the devices at no charge.

The guarantee does not apply to the battery.

Repair of devices disabled as a result of improper use, storage and/or transport, as well as repair after the time of the guarantee has expired, may be provided by the manufacturer according to a separate agreement.

12 REGISTRATION CERTIFICATE

Portable digital video/audio recorder **AVIDIUS mobile** STC-H383,

serial number _____,

conforms to technical requirements and is declared suitable for use.

Adjustment conducted by

Stamp

subscription

name

date

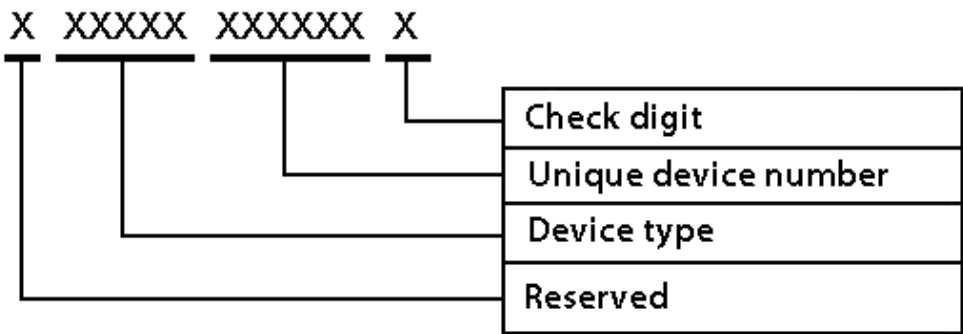
Date of issue

date

subscription

name

Components of the device serial number



APPENDIX A DESCRIPTION OF JACKS AND CABLES

The video/audio recorder is delivered with two connection jacks for connecting external devices:

- Video camera connection jack.
- Microphone, remote control unit and line input audio cable (stereo) connection jack.

A.1 Video camera connection jack

Type of the jack: MINI S2CL0C-P04MCC0-3000.

Manufacturer: ODU, Germany, www.odu.de.



Figure A.1 – General view of the jack



Figure A.2 – Non-assembled view

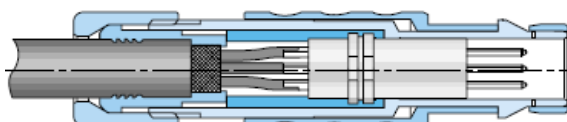


Figure A.3 – Assembled view

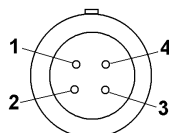


Figure A.4 - Contacts

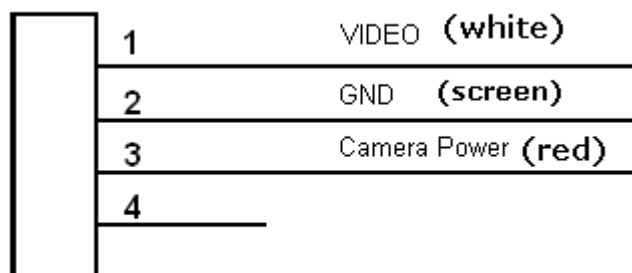
Table A.1 – Contacts

#	Name	Function
1	Video	Camera signal
2	GND	Common bus (ground)
3	Camera Power	Camera power
4	NC	Not used

When assembling the jack, insert the plug into the socket before tightening the thread bushing to avoid any circular displacement of the plug's contacts relatively to the socket.

A.2 Video camera connection cable

The video camera connection cable has a color marking (see Figure A.5).



MINI S2CL0C-P04MCC0-3000

Figure A.5 – Color marking

A.3 Microphone, remote control unit and line input audio cable (stereo) jack

Type of the jack: 3240-10P-C.

Manufacturer: Hirose Electric Co., Ltd, Japan,
<http://www.hirose.com/>.

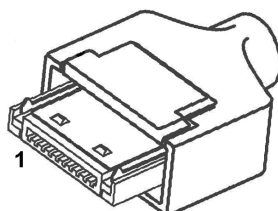


Figure A.6 – General view with numbered contacts

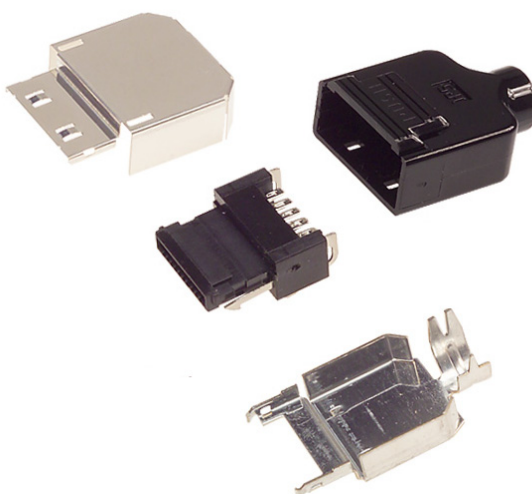


Figure A.7 – Non-assembled view

Table A.2 – Contacts

#	Name	Function
1	Signal GND	Common bus (ground)
2	Lin L input	External line signal input (left channel)
3	Lin R input	External line signal input (right signal)
4	Video Out	Video signal output
5	Distance On	Remote control
6	Ctrl 1	Not used
7	Ctrl 2	Not used
8	Ext Mic In	External microphone input
9	3,6V	External devices' power
10	Digital GND	Digital signal GND

APPENDIX B VIDEO CAMERA QN-C619 (LCL-619)

The recorder's delivery set includes QN-C619 (LCL-619) video camera (Figures B.1).



Figure B.1 –The QN-C619 (LCL-619) video camera

The main parameters of the QN-C619 (LCL-619) camera are listed in the Table B.1.

Table B.1 – Main parameters of the QN-C619 video camera

Sensor	1/4" CCD
Total number of pixels	752x582
Format	PAL
Video out	1 V, 75 Ohm
Resolution	450 tvl
Sensitivity	1.5 lx (F1.2)
Lens	Pinhole 3.7mm (F2.0)
SNR	47 dB
Electronic shutter	1/50~1/10000 sec
AGC	yes
Gamma correction	0.45
White balance	Auto
Power supply	5 V

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